(No Model.) 5 Sheets—Sheet 1.

# M. E. BEASLEY & E. M. HUGENTOBLER

## BARREL MAKING MACHINE.

No. 300,193. Patented June 10, 1884.

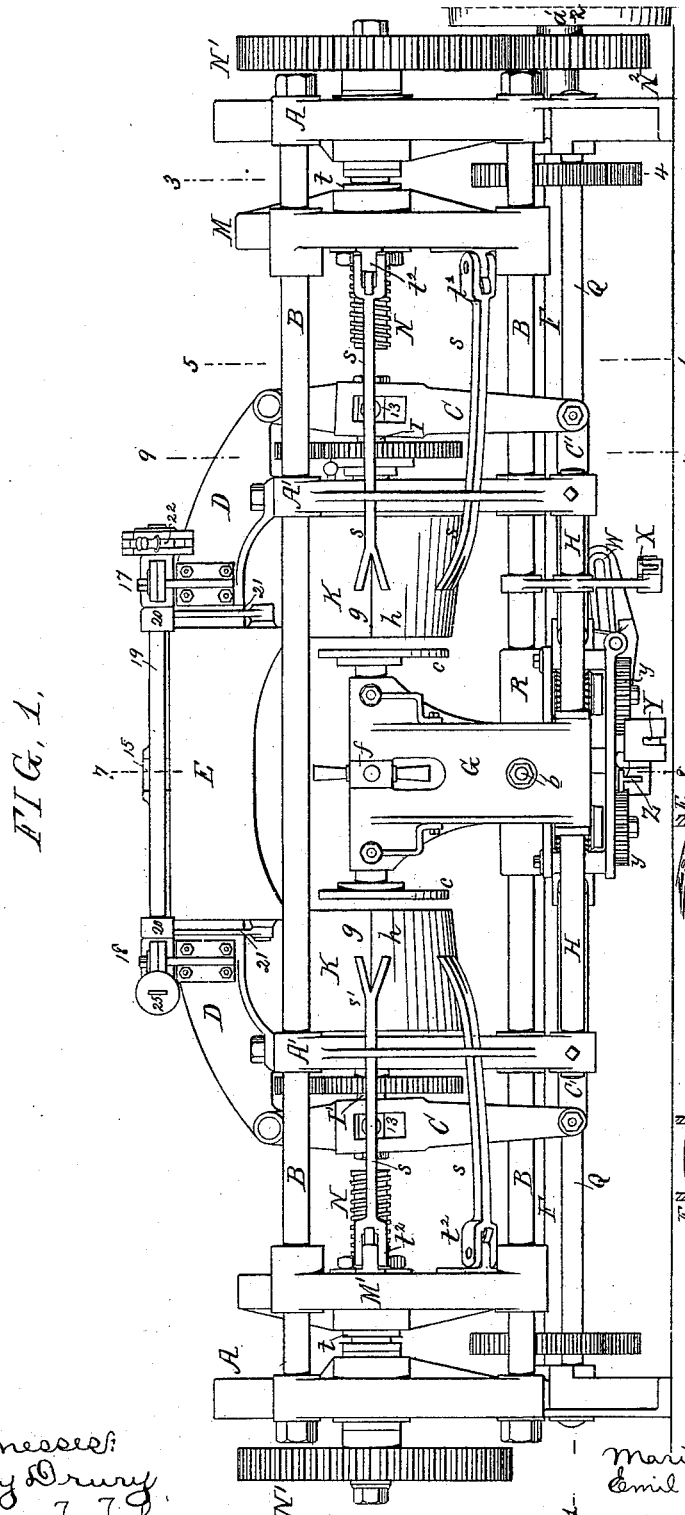


FIG. 1.

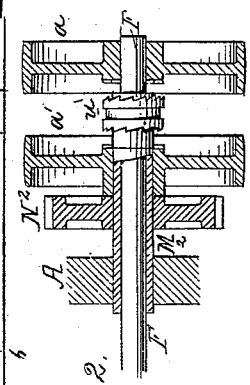


FIG. 2.

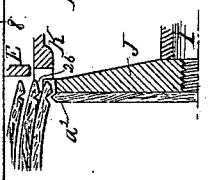


FIG. 16.

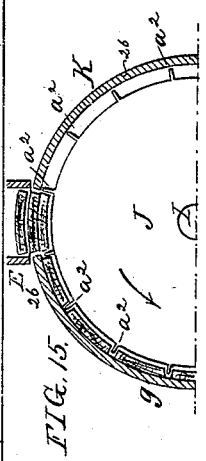


FIG. 15.

Witnesses:
Harry Drury
James J. Johns

Inventors:
Marian E. Beasley
and Emil M. Hugentobler
by their Attys.
Howson & Sons

(No Model.) 5 Sheets—Sheet 2.

# M. E. BEASLEY & E. M. HUGENTOBLER

## BARREL MAKING MACHINE.

No. 300,193. Patented June 10, 1884.

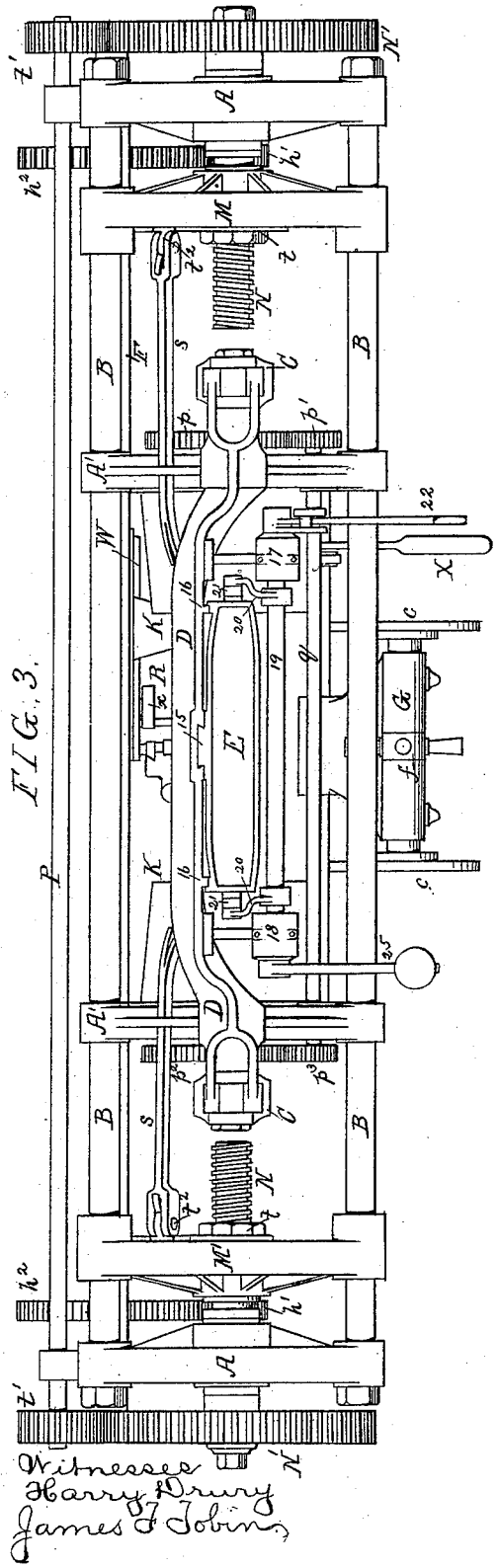


FIG. 3.

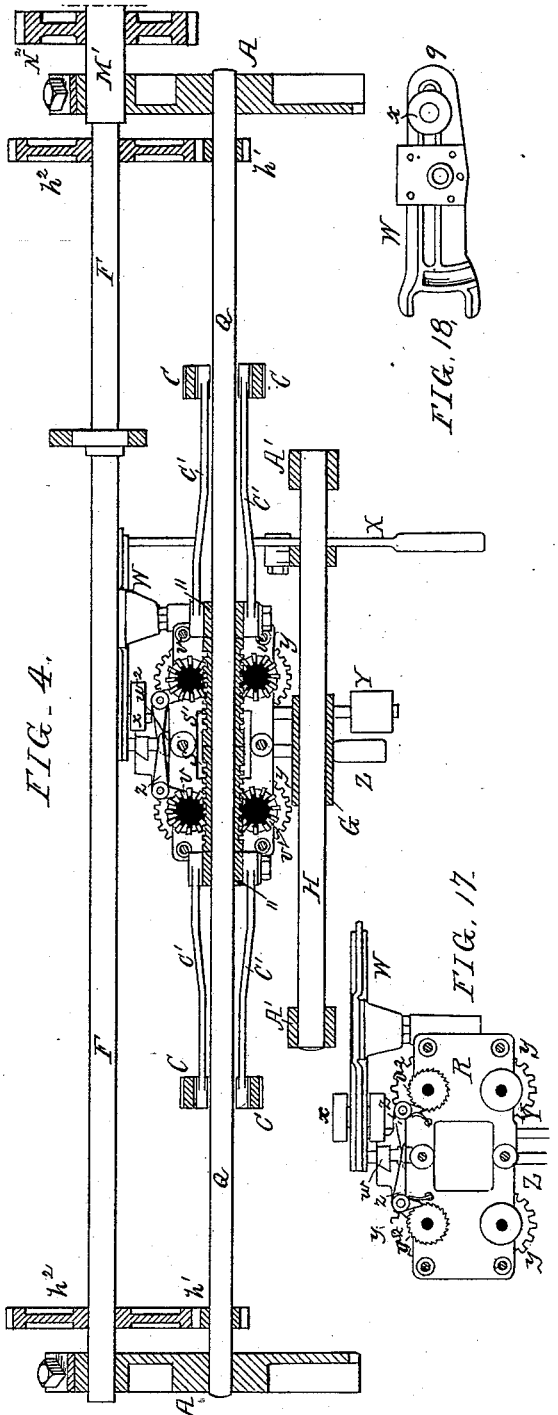


FIG. 4.



FIG. 18.



FIG. 17.

Witnesses
Harry Drury
James F. Jobin

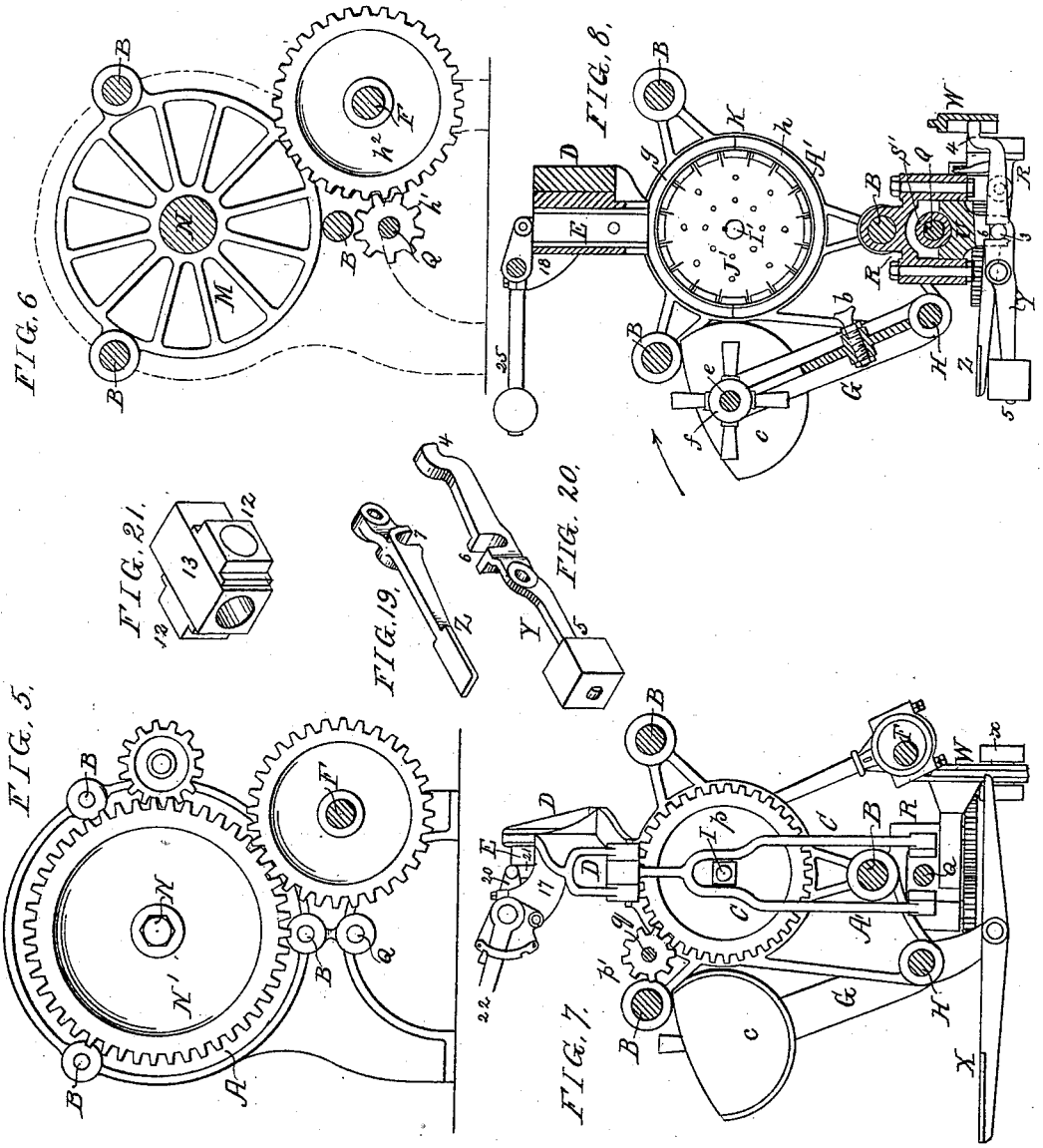
Inventors
Maria E. Beasley
and
Emil M. Hugentobler
by their Attorneys
Howson & Sons

(No Model.) 5 Sheets—Sheet 3.

# M. E. BEASLEY & E. M. HUGENTOBLER

## BARREL MAKING MACHINE.

No. 300,193. Patented June 10, 1884.



Witnesses:
Harry Drury
James F. Jobin

Inventors:
Maria E. Beasley
and
Emil M. Hugentobler
by their Attorneys
Howson & Sons

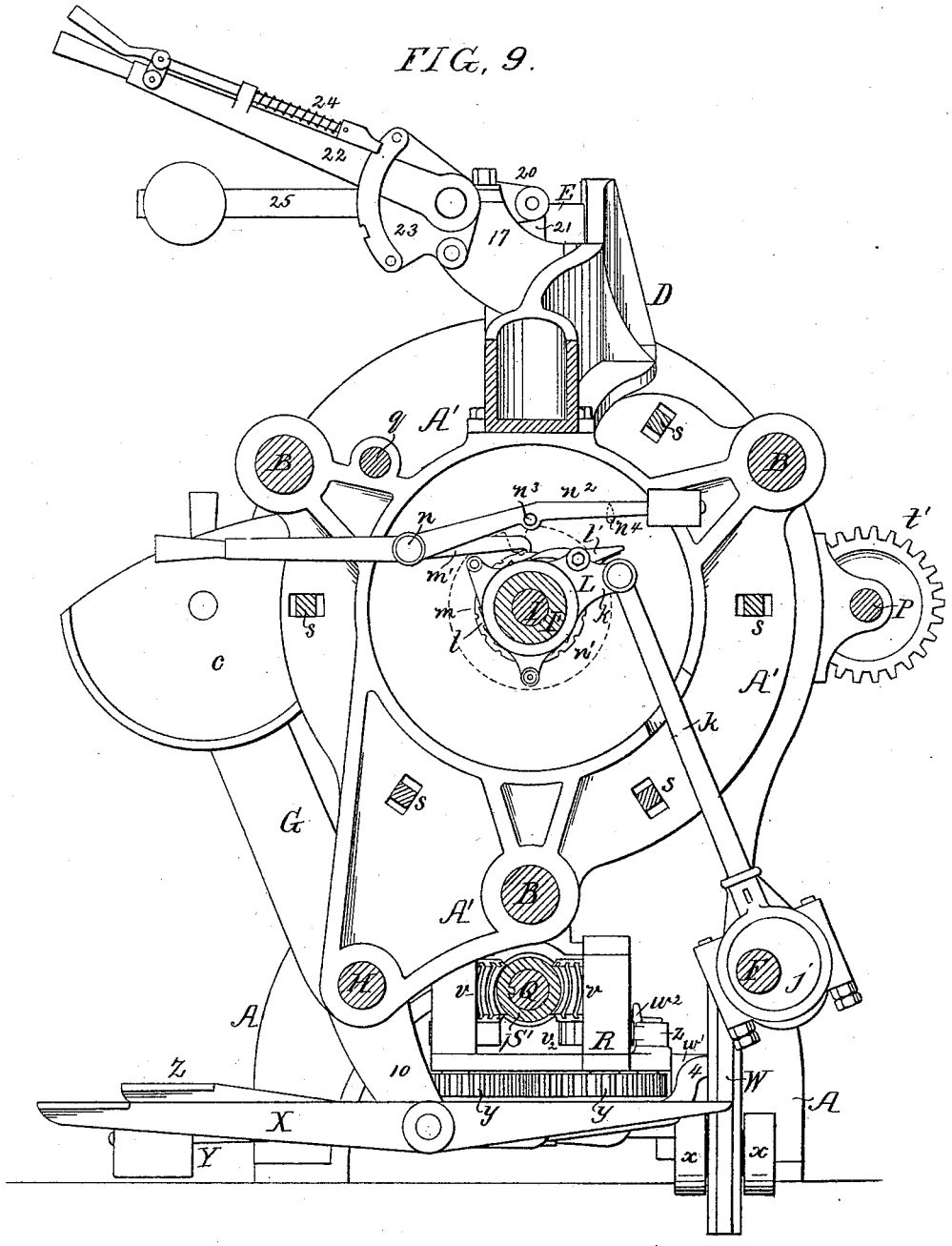
(No Model.) 5 Sheets—Sheet 4.

# M. E. BEASLEY & E. M. HUGENTOBLER

## BARREL MAKING MACHINE.

No. 300,193. Patented June 10, 1884.

FIG. 9.




Witnesses:
James F. Johns
Harry Drury

Inventors:
Maria E. Beasley
and
Emil M. Hugentobler
by their Attorneys,
Howson & Sons

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 5 Sheets—Sheet 5.

# M. E. BEASLEY & E. M. HUGENTOBLER

## BARREL MAKING MACHINE.

No. 300,193. Patented June 10, 1884.

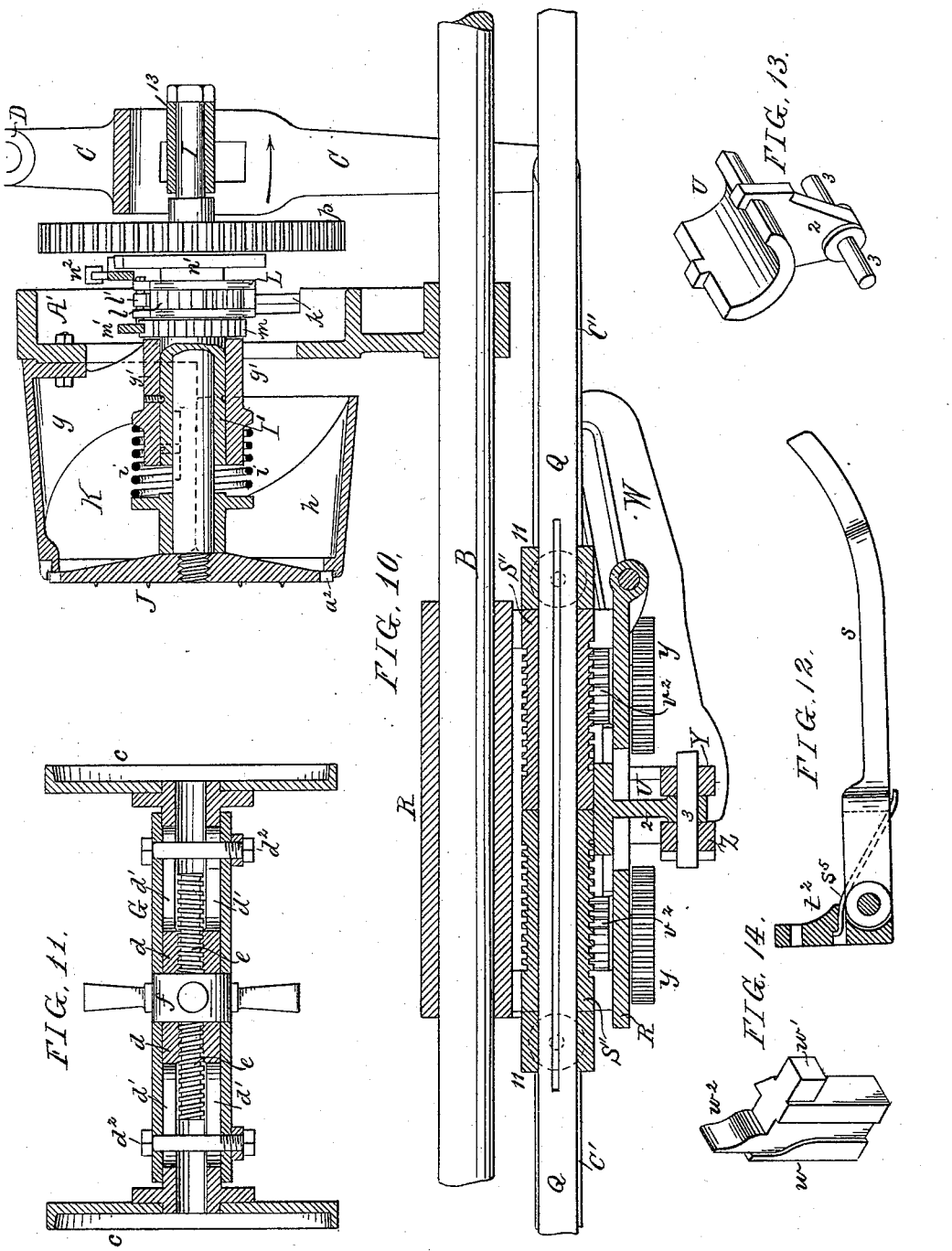


FIG. 10.



FIG. 13.



FIG. 12.



FIG. 14.



FIG. 11.

Witnesses:
Harry Drury
James J. Jobin

Inventors
Maria E. Beasley
and Emil M. Hugentobler
by their Attys.
Howson & Sons

# UNITED STATES PATENT OFFICE.

MARIA E. BEASLEY, OF PHILADELPHIA, PENNSYLVANIA, AND EMIL M. HUGENTOBLER, OF NEW YORK, N. Y.; SAID HUGENTOBLER ASSIGNOR TO SAID BEASLEY.

## BARREL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 300,193, dated June 10, 1884.

Application filed May 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, MARIA E. BEASLEY, a citizen of the United States, residing in Philadelphia, Pennsylvania, and EMIL M. HUGENTOBLER, also a citizen of the United States, residing in New York city, New York, have invented an Improved Barrel-Making Machine, of which the following is a specification.

This invention relates to a machine for the manufacture or building up of barrels, the staves and heads having been first formed and cut to the required size by separate machinery. The barrel is formed by placing the heads in the machine and fitting the staves around the periphery of the heads, and the barrel is then released and is ready to be operated on by a hooping-machine; or the hoops may be forced down in place by the usual method.

The construction and operation of the machine will be fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, is a front elevation of our improved barrel-building machine; Fig. 2, a section of the driving-gear; Fig. 3, Sheet 2, a plan view; Fig. 4, a sectional plan on line 1 2, Fig. 1; Fig. 5, Sheet 3, an end view of the machine; Fig. 6, a transverse section on line 3 4, Fig. 1; Fig. 7, a transverse section on line 5 6, Fig. 1; Fig. 8, a transverse section on line 7 8, Fig. 1; Fig. 9, Sheet 4, a transverse section drawn to an enlarged scale on line 9 10, Fig. 1; Fig. 10, Sheet 5, a longitudinal section of part of the machine drawn to an enlarged scale; Fig. 11, a detached section of the head-centering mechanism; Figs. 12, 13, and 14, detached views of parts of the machine; Figs. 15 and 16, Sheet 1, diagrams illustrating the fitting of the staves around the heads of the barrel; Figs. 17 and 18, Sheet 2, and Figs. 19, 20, and 21, Sheet 3, detached views of parts of the discharging mechanism.

The frame of the machine consists of four heads, A A A′ A′, through which pass three tie-bolts, B B B, the two end heads, A A, having suitable legs to support the structure.

Resting on the top and bolted to the two heads A′ A′ is a frame, D, on which slides the hopper E.

F is the main driving-shaft running the length of the machine and carrying at one end a driving-pulley, *a*.

There are five separate and distinct movements in this machine, and, in order to simplify the description, we will describe them separately in the following order: First, the swinging frame for placing the heads centrally in the machine; second, the fitting of the staves around the heads; third, forcing the hoops over the barrel; fourth, the releasing of the barrel; and, fifth, the raising and lowering of the hopper containing the staves.

The mechanism for placing the heads centrally in the machine is shown in Figs. 1, 3, 8, and 11, and is as follows:

G is a swinging frame pivoted to the shaft H, which is attached to the two heads A′ A′, and the extent of movement of this frame on its pivot inward is limited by a stop, *b*, striking against part of the permanent frame.

The detailed construction of the upper part of the frame will be best observed by reference to Fig. 11, Sheet 5, which is a sectional plan of that part of the frame. Two disks, *c c*, flanged to receive and hold the heads of the barrel, are attached to two sleeves, *d d*, which have their bearings in the upper part of the frame G. The disks are partially cut away to allow of the easy introduction and adjustment of the barrel-heads. A handled collar, *f*, let into a slot in the frame G, carries right and left handed screw-bolts *e*, adapted to the internally-threaded sleeves *d d*. These sleeves have longitudinal slots *d′*, to allow bolts *d²* to pass through the frame and sleeves to prevent the disks *c c* from turning when the screw-bolt *e* is turned. Thus by turning the collar *f* and its screw-bolt in one direction the disks *c c* are forced out, and by turning them in the opposite direction the disks are caused to approach each other.

The fitting of the staves around the head is effected by mechanism shown in Figs. 1, 3, 8, 9, 10, 15, and 16.

J J′ are two disks, which are attached to the shafts I I, and on the periphery of these disks

are thin radial ribs or partitions $a^2$, leaving intermediate spaces for the reception and separation of the staves as they are fed into the machine.

Referring to Fig. 10, Sheet 5, the cone K, in the end of which fits the disk J, is made in two parts, $g$ $h$, the upper half, $g$, of the cone being stationary and bolted to the head A′ of the main frame, and having a bearing, $g'$, for the sleeve I′ on the shaft I. The lower half, $h$, of the cone K is hung to the shaft I, and can slide with the shaft, but cannot revolve thereon. The shaft I revolves with the sleeve I′, but has an independent endwise movement, for a purpose described hereinafter.

The object of making the cone K in two parts is to permit the retraction of the lower half with the disk, in order to discharge the barrel.

A spring, $i$, between flanges on the sleeves of the two halves of the cone, normally maintains the half-cone $h$ and the disk J in their forward positions. (Shown in Fig. 10.)

The cone on the opposite side of the machine, in which fits the disk J′, is identical with the cone K, just described.

The mechanism for intermittently rotating the shafts I I and disks J J′ will now be described, reference being had to Figs. 9 and 10.

On the main shaft F of the machine is secured an eccentric, $j$, the strap of which is connected by a rod, K, to an arm, K′, on a rocking frame, L, which is loose on the sleeve I′ Attached to the sleeve is a ratchet-wheel, $l$, which has as many teeth as there are staves for the barrel. In the present instance sixteen staves are required to complete the barrel, and there are sixteen ratchet-teeth. A pawl, $l'$, is pivoted to the rocking frame L, and operates on the wheel $l$, each revolution of the main shaft thus turning the ratchet-wheel to the extent of one tooth. Adjacent to the ratchet-wheel $l$ is a detent-wheel, $m$, on the periphery of which are notches corresponding with the teeth of the ratchet-wheel. The end of an arm, $m'$, pivoted to a stud, $n$, on the head A′ of the main frame, drops into the notches on the detent-wheel $m$, to prevent the ratchet from carrying the disk J over the one-sixteenth turn, as the spaces between the ribs or partitions $a^2$ must be exactly under the hopper at each turn of the disk J. A wheel, $n'$, is attached to the sleeve I′ on the opposite side of the rocking frame L from the detent-wheel $m$, and a weighted arm, $n^2$, pivoted to the stud $n$ on the head A′ of the main frame, has a pin, $n^3$, resting on the periphery of the wheel $n'$. This wheel has a notch, as indicated by dotted lines in Fig. 9, which is set so as to come under the pin $n^3$ when all the staves are in place around the heads of the barrel. Then the weighted arm $n^2$ falls, and at the same time a lug, $n^4$, on the said arm $n^2$ trips the pawl $l'$ up out of contact with the ratchet-wheel $l$, so that although the frame L still continues its rocking motion, the pawl being out of contact with the wheel $l$, no motion will be given to sleeve I′ and shaft I. The arm $n^2$ is provided with a handle on the front side of the machine to enable the operator to release the wheel $n'$ from the arm and allow the spring-pawl $l'$ to resume its normal position and impart motion to the disk J intermittently, as before. A shaft, $q$, has its bearings in the two heads A A′, and communicates the intermittent rotary motion imparted to sleeve I′ to the opposite sleeve I′, carrying the other disk J′ through the medium of the two sets of gear-wheels and pinions $p$ $p'$ and $p^2$ $p^3$, the gear-wheels $p$ $p^2$ being on the sleeves I′ I′ and the pinions $p'$ $p^3$ on the shaft $q$.

The mechanism for forcing the hoops over the staves after the latter have been applied to the heads is shown in Figs. 1, 3, 9, and 12, and is as follows: Two heads, M M′, are mounted so as to slide on the rods B, (best observed in Fig. 1,) the head M at one end of the machine and the head M′ at the opposite end. The sliding head M has a suitable screw-nut, $t$ for the passage of the screw-bolt N, which is adapted to turn in bearings in the frame A, and carries at its outer end a cog-wheel, N′, which gears into a wheel, $N^2$, attached to a sleeve, $M^2$, on the main driving-shaft F. On this sleeve is a loose pulley, $a'$, revolving in a different direction from the pulley $a$.

Between the driving-pulley $a$ on the shaft F and the pulley $a'$ is a clutch-sleeve, $u$, sliding on but turning with the sleeve $M^2$. This clutch-sleeve has teeth to engage with teeth on the hubs of either of the two pulleys $a$ $a'$, so that the heads M M′ may be forced forward when the clutch-sleeve $u$ engages with the teeth of the pulley $a$, or drawn backward when it engages with the teeth of the pulley $a$, or remain stationary when midway between the said pulleys. A shaft, P, at the back of the machine, serves to connect the screw-shaft N of the head M to the screw-shaft N of the head M′ at the opposite end of the machine by gearing N′ N′ $t'$ $t'$.

To lugs $t^2$ on the face of each of the heads M M′ are pivoted a number of arms, $s$—five in the present instance. These arms are adapted to pass through and are guided in slotted openings in the frames A′ A′, and the front ends of the arms are forked and caused to bear on the cone K by the springs $s^5$. The object of these fingers is to force the hoops onto the barrel, as described hereinafter.

The mechanism for releasing the finished barrel is shown in Figs. 1, 4, 7, 8, 9, 10, 13, 14, 17, 18, 19, 20, and 21, and is as follows: A box or casing, R, is attached to the lower stay-bolt, B, in the middle of the machine. A shaft, Q, passes through this casing R, and on it are mounted two screw-sleeves, $s'$ $s'$, connected to the shaft by a key or spline, so as to rotate therewith but be capable of moving longitudinally thereon, one of the sleeves having on its exterior a right-hand thread and the other a left-hand thread. These screws mesh with worm-wheels $v$ $v$ $v'$ $v'$, which have their bearings in the casing R. The wheels $v$ $v'$, gearing with each screw, are geared together by pinions $y$ on the under side of the casing R, Figs. 9, 10, and 14. The shaft Q is geared, through the pinions $h'$

and gear-wheels $h^2$, with the main driving-shaft F, Fig. 4, so that a constant rotary motion is imparted to the said shaft Q and to the sleeves $s'$, and the screw-threads on these wheels in turn impart rotary motion to the wheels $v$. If, then, these wheels $v$ are locked at any moment so as to prevent their rotation, the continuing rotation of the shaft Q and sleeves $s'$ will cause the latter to move apart longitudinally on the shaft Q until the said wheels $v$ are unlocked or released. The devices for locking and releasing those wheels will be referred to hereinafter. Bearing against the opposite ends of these sleeves $s'$ are loose collars 11, which are connected by links C', Fig. 4, to two pendent swinging arms, C, Figs. 1 and 7, pivoted at their upper ends to the upper part of the frame and forked at their lower parts, Fig. 7. These swinging arms are connected to the outer ends of the shafts I, Fig. 10, through the medium of a universal coupling, so that the movement of the arms C on their pivots will impart a corresponding longitudinal movement of the shafts I with the disks J and halves $h$ of the two cones.

The coupling between the arm C and shaft I is illustrated in perspective in Fig. 21, and consists of a sleeve, 13, mounted on the shaft I, and provided with swiveled blocks 12, adapted to vertical slots in the forks of the arm C, Figs. 1 and 10.

The mechanism we prefer to use for locking and releasing the wheels $v$ $v'$ will be understood on reference to Figs. 4, 8, 9, 10, 13, 14, 17, 18, 19, and 20.

To the under side of the two wheels $v$ are secured ratchet-wheels $v^2$, Fig. 17, into which may be geared the pawls on the bell-crank levers $z$ $z$, springs acting on these levers so as to tend to throw them into gear with the ratchets, whose teeth are arranged in such a direction that when the said pawls are thrown into gear with them they (the pawls) will prevent the further rotation of the wheels $v$ $v'$ by the screw-sleeves $s'$. Different devices may be employed for throwing these pawls into or out of gear; but we prefer those shown in the drawings. A vertically-sliding block, $w$, Fig. 14, has a wedge-shaped projection, $w^2$, acting on the inner faces of the long arms of the levers $z$, and a projection, $w'$, on this block is acted on by arms on a trip-lever, W, Fig. 18, pivoted to the frame. This lever W is pivoted to the frame R, and a weight, $x$, runs on ways in the lever, so that when one end of the lever is tilted above the center the weight $x$ rolls down to the lower end of the lever, thereby completing the full movement of the said lever. The block $w$ has a projection, $w'$, which enters a recess in the end of the lever W, and a tapered projection, $w^2$, which acts on the long arms of two pawls, $z$ $z$, pivoted to the casing R. The short arms of the pawls $z$ $z$ act on ratchet-wheels $v^2$ on the hubs of the worm-wheels $v$ $v$. (Best observed in Fig. 17.)

On the under side of the casing R are pivoted two levers, Y and Z. One end, 4, of the lever Y is curved and projects into a slot in the lever W, the other end, 5, being weighted. A block, U, sliding in the casing R, bears against the under side of the heads of the screw-sleeves $s'$, and a pin, 3, passes through a lug, 2, on the under side of the block U, one half of this pin fitting into a slot, 6, in the top of the lever Y, and the other half in a slot, 7, in the under side of the lever Z. Thus as soon as the screws $s'$ move apart, the block U is forced up between them by the weighted lever Y, the block keeping the screws apart until the operator presses on the lever Z, which presses down on the pin 3 and releases the block U from between the two screws $s'$ $s'$. At the same time that the weighted lever Y raises the block U it also tilts up the end of the lever W, and the weight $x$ rolls to the end 9 of the lever and elevates the block $w$, the portion $w^2$ of which actuates the spring-pawls $z$ $z$ and releases the short arms of the pawls from the ratchet-wheels $v^2$, the wheels $v$ $v$ $v'$ $v'$ being thereby unlocked, so as to be free to turn with the screw-sleeves $s'$ $s'$. As soon as this is effected, the sleeves are forced against the block U, and when said block is depressed they are forced together, owing to the action of the springs $i$ in the cones K upon the shafts I, the movement being transmitted through the medium of the arms C and links C'. A treadle-lever, X, hung to a hanger, 10, serves to tilt the outer end of the lever W and operate the same, so as to induce the movement of the block $w$ in the opposite direction to that above described. As soon as the treadle-lever is pressed down by the operator and the lever W is shifted, the block $w$ is depressed, the pawl-levers Z lock the wheels $v$ $v'$, and the screw-sleeves $s'$ move apart, the collars 11 moving with them, so that the arms C C, which are connected to the collars, will force the shafts I I in the direction of the arrows, Fig. 1, thus withdrawing the disks J J' and the lower halves, $h$, of the cones K away from the heads of the barrel, thereby releasing the barrel, which falls out of the machine as soon as the sleeves have been moved apart sufficiently. The block U then enters between them and keeps them apart; but as soon as the said block U is withdrawn by pressing on the lever Z the springs $i$ $i$ in the cones K force the disks J J', with the lower halves, $h$, of the cones, out to their original positions and the screw-sleeves $s'$ $s'$ approach each other.

The mechanism for raising and lowering the hopper containing the staves is shown in Figs. 1, 3, 7, 8, 9, and is as follows: A projection on the back of the hopper E slides in a dovetail groove, 15, in the frame D, the hopper being steadied by rails 16 on the frame. Two bearings, 17 and 18, for a shaft, 19, project from the frame D, and on this shaft are two arms, 20, connected to studs on the hopper E by links 21. At one end of the shaft 19 is a lever, 22, working in a segment, 23, attached to the frame, this lever having a spring-bolt, 24, to enter recesses in the segment. By moving

the handle up or down the hopper E can be raised or lowered through the medium of the shaft 19, arms 20, and links 21, and locked in either position by the engagement of a bolt, 24, with the recesses in the segment. A weighted lever, 25, is attached to the shaft 19 at the opposite end to that which carries the operating-lever 22. This weighted lever 25 counterbalances the hopper E.

The object of raising the hopper is to permit the hoops to be placed on or drawn off of the cones K K, on which the hopper rests when down.

The operation of the machine is as follows: The hoops are first placed on the cones K in front of the fingers *s*, the swinging frame G being in position shown in Fig. 8—that is to say, in its outer position. The two heads of the barrel to be formed are placed in the flanged disks *c c*, and the frame G is then pushed over in the direction of the arrow, Fig. 8, until it is arrested by the stops, the heads being then in line with the disks J J′. By turning the screw-bolt *e*, the heads of the barrel are forced against the disks, and are held by the small pins or projections on the faces of the latter, the frame G being then withdrawn. The handle 22 is then operated to permit the descent of the hopper E, which rests on the cones K K. The hopper is filled with staves, and, the machine being started, the disks J J′ are turned to the extent of one stave, or one-sixteenth of a revolution, on each revolution of the driving-shaft. The staves rest directly one upon another, the lowest bearing upon the disks J J′ between two of the fins $a^2$, so that as the disk is rotated stave after stave drops onto the disks and is carried around under the flanges 26 of the cones K, which prevent any of the staves from falling out. (See Figs. 15 and 16.) When all of the staves have been adjusted, the heads M M′ are put in motion by shifting onto the pulley *a* the clutch *u*, which has occupied a central position between the two pulleys *a a′*. The screw-shafts N are turned so as to force the heads M M′ toward each other, the fingers *s* acting on the hoops which have been deposited on the cones K, and forcing said hoops from the cones and onto the barrel, the staves of which are thus compressed around the heads, so as to firmly retain the same. The clutch *u* is then thrown into gear with the wheel *a′*, and the movement of the screw-shafts N is thereby reversed, so as to retract the heads M M′ and their fingers *s*, the clutch being then restored to the intermediate position, so as to throw the screw-shafts N out of gear. Pressure upon the treadle X then causes the retraction of the shafts I through the medium of the devices described, and this causes the withdrawal of the disks J J′ and the lower halves of the cones K, so as to release the barrel, which falls from the machine onto the floor or into a suitable receptacle. The operation is completed by depressing the lever Z, so as to release the screw-sleeves from the control of the block U and wheels V V′, and thus permit the disks J J′ and the lower halves of the cones K to be forced by the springs *i* back to their original position prior to a repetition of the above-described operations.

Instead of being used for making the barrel complete, as described, the machine may, if desired, be employed for setting up the body only of the barrel, the frame G and the mechanism carried thereby being dispensed with or thrown out of use in this event, and in some cases the disks J J′ may be rotated slowly but continuously instead of having the intermittent movement described imparted to them, the latter method of operation, however, being preferred.

We claim as our invention—

1. The combination, in a barrel-forming machine, of a stave-feeding device, opposite disks constructed to receive and support upon their peripheries the ends of the staves, mechanism for rotating said disks, and the flanges 26, surrounding but independent of the disks, and notched for the passage of the staves, said flanges projecting over the ends of the staves, whereby they serve to retain said staves in place on the peripheries of the disks as the latter are rotated, all substantially as set forth.

2. The combination, in a barrel-forming machine, of a stave-feeding device, opposite disks constructed to receive and support upon their peripheries the ends of the staves, mechanism for rotating the disks, the flanges 26, surrounding but independent of the disks and notched for the passage of the staves from the feeder, said flanges projecting over the ends of the staves, so as to retain the same upon the peripheries of the disks, the opposite hoop-holders and fingers for forcing the hoops from said holders and onto the barrel while the ends of the staves are within the flanges 26, as set forth.

3. The combination, in a barrel-forming machine, of the stave-feeding device, the opposite disks, J J′, constructed to receive and support upon their peripheries the ends of the staves, and having on said peripheries projecting pins $a^2$, forming stave-sockets, mechanism for rotating said disks, and the retaining-flanges 26, surrounding but independent of the disks and notched for the passage of the staves, said flanges projecting over the ends of the staves and serving to retain them upon the peripheries of the disks as the latter are rotated, as set forth.

4. The combination, in a barrel-making machine, of a stave-feeding device, opposite disks constructed for the reception and support of the ends of the staves, and having their faces provided with means for retaining the heads of the barrel, mechanism for rotating said disks, the flanges 26, extending completely around the disks, and notched for the passage of the staves, and projecting over the ends of the same, so as to serve as a retainer, opposite hoop-holders, and the hoop-driving fingers, as set forth.

5. The combination of the disks J J′ and

means for rotating the same, the cones K, having notched flanges 26 upon the ends of the cones, and constructed to overlap the ends of the staves, a stave-holding box, E, located above the notched portions of the flanges, and means, substantially as described, whereby said box can be raised and lowered, as set forth.

6. The combination of the stave-feeder, the opposite disks J J′, the flanges 26, projecting over the disks so as to retain staves carried thereby, each flange comprising a lower longitudinally-movable half and an upper fixed half notched for the passage of the staves, and mechanism, substantially as described, for rotating the disks and for retracting the same and the lower halves of the flanges, as set forth.

7. The combination of the opposite disks J J′, situated within the cones K K, with the swinging frame G and disks *c c*, and with mechanism for advancing and retracting said disks, as set forth.

8. The combination, in a barrel-forming machine, of the disks J J′, constructed to receive the staves, the shafts or sleeves I, carrying said disks, gearing connecting said shafts or sleeves, the ratchet-wheel *m* on one of the shafts or sleeves, the rocking frame L, operated continuously, and having a pawl engaging with the ratchet-wheel, the ratchet-locking wheel *n′*, and the locking-lever $n^2$, constructed as described, whereby it trips the pawl and throws the same out of gear on dropping into position to lock the wheel *n′*, as set forth.

9. The combination of the disks J J′ and their shafts I, the pivoted arms C, connected thereto, the longitudinally-movable screw-sleeves *s′ s′*, means for connecting one sleeve to one arm and the other to the opposite arm, devices for rotating the sleeves, wheels gearing into said sleeves, and mechanism for locking and releasing said wheels, as set forth.

10. The combination of the disks J J′, the shafts I, the arms C, connected thereto, the longitudinally-movable screw-sleeves *s′ s′*, connected one to one arm and the other to the opposite arm, devices for rotating said sleeves, wheels *v*, gearing into the sleeves, ratchets $v^2$ on said wheels, pawl-levers *z*, adapted to the ratchets, and a wedge-block, *w*, adapted to act upon said levers, as set forth.

11. The combination of the disks J J′, the shafts I, the arms C, connected thereto, the longitudinally-movable screw-sleeves *s′ s′*, connected one to one arm and the other to the opposite arm, devices for rotating said sleeves, the wheels *v*, gearing into the sleeves, the ratchets $v^2$ on said wheels, the pawls *z*, adapted to the ratchets, the wedge-block *w*, acting on the pawls, the balance-lever W, controlling said wedge-block, and having a movable weight, *x*, the operating-treadle X, constructed to tilt said lever, the weighted lever Y, adapted to reverse the same, the block U, adapted to fit between the sleeves *s′ s′*, and having a pin for acting on the lever Y, and the restoring-lever Z, constructed to depress the block U, as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

MARIA E. BEASLEY.
EMIL M. HUGENTOBLER.

Witnesses:
HARRY L. ASHENFELTER,
HENRY HOWSON, Jr.